

## Lec 3

### Stock Flow diagram:

- When you freeze the time stock continue but flow stop
- Any system is a collection of stocks that changed by the flow.

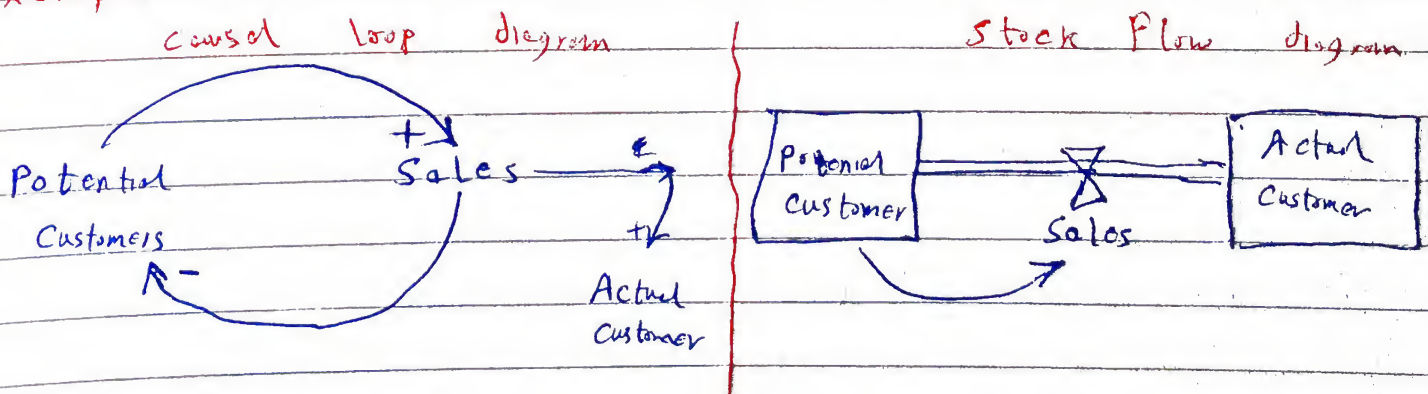
### Types of stocks:

- 1- materials
- 2- personal
- 3- Capital equipments
- 4- Informations
- 5- Orders - Communications
- 6- Money

### Stock Flow model consist of:

- 1- stocks
- 2- flow
- 3- Auxiliary Variable

### Example



This system can be represented using S-shape

$$\text{Actual customer} = \int_0^t \text{Sales}(t) dt$$

$$\text{potential customer} = I - \int_0^t \text{sales}(t) dt$$

I → initial value

\* difference between simulation and emulation?

\* Stock can't be negative but flow can't be negative

~~In operation example~~

In State space model  
States are Flow